Objectives

- To understand the factors that place teen drivers at risk of motor vehicle crashes
- To understand the impact of Graduated Driver’s Licenses on teen driver crashes
- To understand the current California Graduated Driver’s License
- To learn what Pediatricians can use when counseling teens and parents about safe driving including use of a Parent Teen Driving Agreement
You are in your primary care office and are about to see your next patient, Earl E. Driver. He is 15-1/2 years old and is here for his well-child check. He has been generally healthy without any significant medical problems and is on no medication.
You notice on Earl’s Staying Healthy Assessment that he does not always wear a seat belt. When you ask about it, Earl says that he just doesn’t always remember but now that he is getting his learner’s permit, he knows he has to do a better job.
Earl then asks why there are all these restrictions on him getting a driver’s license.

“What’s the big deal? I think that adults just want to control what we do”

- What is the big deal?
- Why do we restrict what Earl does?
- What can a pediatrician do to help Earl?
Motor Vehicle Crashes and Teens

- Motor Vehicle Crashes are the leading cause of death for teens in the United States
  - 36% of all deaths ages 15-19
- In 2010, 7 teens ages 16-19 died each day in crashes
- 2/3 of deaths of teen passengers are with teen drivers
- Crash rate for 16 year olds is 3.7 times higher than drivers of all ages
- Crash rate for 19 year olds is 2 times higher than drivers of all ages

Source: Dmv.ca.gov Young Drivers
- Per mile driven, teens are 3 times more likely to be in a fatal crash than those 20 years or older.
- The fatal crash rate for a 16 year old (per million miles driven) is 7 times that of a driver 30-59 years old.
What places teens at risk?

- Inexperience
- Risk taking
- Teen passengers
- Night-time driving
- Impaired driving
- Lack of seat belt use
- Distractions
Inexperienced

- The highest crash rates occur in the 1\textsuperscript{st} month after licensure
  - Crash rate drops 41\% over the 1\textsuperscript{st} 6 months of licensure
  - Crash rate drops 60\% over the 1\textsuperscript{st} 2 years of licensure
- For Learners (those still with a permit and driving with an adult), the crash rates are much lower and constant over time. Novice drivers (licensed to drive without an adult) have much higher crash rates than learners
Mayhew, et al., Accident, Analysis & Prevention 2003
Why does level of experience matter?

- Young drivers are less able to detect and respond to hazards.
- Young drivers are less able to control a vehicle in a hazardous situation, especially at higher speeds.
Risk Taking

- Males are at greater risk than females
- Teens are more likely to drive faster and leave less headway between them and the next car
  - 38% teen males in crashes were speeding
  - 25% teen females in crashes were speeding

Teen Passengers

- For a teen driver, the chance of being involved in a car crash is directly proportional to the number of other teens in the car
  - 1 friend, leads to a 40% \( \uparrow \) risk of crashing
  - 2 friends doubles the crash risk
  - 3 friends raises the crash risk by almost 4 times

- If passengers are over 30 years old, there is no increased risk

- Male teen passengers lead to higher risk of fatal crash than female passengers

- This increased risk is likely due to increased risk taking and higher rates of distractions

Night-time Driving

- 16-17 year olds have the highest night crash rates of any age group
- If another passenger is present, the rate is higher
- Death rate/million miles driven is
  - 3 times higher 10 pm-12 MN vs 6 am-10 pm
  - 10 times higher 12 MN-6 am vs 6 am-10 pm
- However, more fatal crashes happen from 9 pm-12 midnight due to higher number of miles driven during that time period
Impaired Driving

- At all blood alcohol levels, teens have a greater risk of crash than adults
- 24% teen drivers involved in fatal crashes had been drinking
- 24% teens report riding in the last month with a driver who had been drinking
- 8% of teens report driving after drinking within the last month

NHTSA.GOV & CDC.GOV/YRBS
What about other drugs?

- Many prescription and OTC drugs are also hazardous: benadryl, antihypertensives, analgesics
- 50 mg of benadryl is worse than driving with BAL of 0.1%
- Marijuana also leads to impaired driving skills and is often used with alcohol
Seat Belt Use

- Teens have the lowest rates of seat belt use among any age group
  - Only 54% report using a belt when riding with others
  - 58% teen passengers killed were unbelted
- It is estimated that regular seat belt use could decrease the teen death rate by 45%

Why don’t teens use seatbelts?

- Not cool
- Only going a short distance
- Will get clothing wrinkled
- Peer pressure
- Perception as likely to harm as to help
Distracted Driving

- Visual distractions: taking eyes off the road, such as looking at a phone or someone else in the car
- Manual distractions: taking the hands off the wheel, such as changing a radio dial or typing a message
- Cognitive distractions: taking mind off of driving
- Some distractions involve all 3 areas, such as reading and responding to a text message
Common Distractions

- Phones
- Radio/cd player
- Texting
- Eating & drinking
- Talking to other vehicle occupants
Distracted Driving

- In 2011, 10% of all crashes involved distracted driving.
- Younger/inexperienced drivers had the highest proportion of distraction-related fatal crashes.
- Of 15-19 year olds involved in fatal crashes, 21% were distracted by the use of cell phones.
Texting & Driving

- Nearly ½ of all high school students over the age of 16, text or e-mail while driving
- 25% of teens report responding to one or more text message every time they drive
- Students who text while driving are 5 times more likely to drink and drive

CDC.GOV/YRBS
Back to Earl’s initial question…

- What are the restrictions?
- Is there evidence that these restrictions work?
- The answers are contained in the Graduated Driver’s License (GDL) which is sometimes referred to as a Provisional Driver’s License in California.
- The next few slides will review basics of GDL and effectiveness of GDL
GDL in the United States

- 1996, Florida became the 1st state to adopt and implement a GDL
- 1998, California adopted and implemented a GDL which has been modified over time
- All states now have some version of GDL although exact components vary by state

L Garay 2004
Evidence of the Effectiveness of GDLs

- Fatal crash rates of 16-17 year olds in US have decreased 57% since 1995
  - Much of this thought to be due to widespread GDL use
- In States after implementing GDL, a 20-40% decrease is seen in teen fatalities for youngest drivers
  - Similar decrease is also seen for injury crash rates

AF Williams 2012
California Results

In the first year of GDL:

- Fatal and at-fault injury crashes among 16 year olds fell by 23%
- Teen passenger deaths and injuries in cars driven by 16 year olds decreased by 40%

HM Simpson 2003
7 GDL Components

- Minimum age of Learner’s Permit
- Minimum hours of supervised driving
- Mandatory waiting before a Graduated license
- Minimum age of Graduated License
- Minimum age of full license
- Night time driving restrictions
- Teen passenger restrictions
What seems to be most important

- Can be difficult to assess what components of GDL are most important: components are designed to work as a whole

- Likely the following:
  - Increasing age at Licensure
  - Increasing length of supervised driving
  - Limiting high risk driving situations after obtaining a GDL

- Parents seem to be more capable to establish and support driving restrictions when state law supports them
Learner’s Permit

Starting no earlier than 16 years of age and continuing at least 6 months.

A minimum of 30 hours of adult-supervised on-road driving during the permit stage. At least 5-10 hours should be at night.
AAP Recommended Standards

- Provisional Stage lasting until at least 18 years
  - Night driving restrictions
    - 9 PM- 5 AM for 1st 6 months
    - Midnight- 5 AM until 18 years
  - Passenger limits unless with an adult driver (over 25 years of age)
    - 1st 6 months: no teen passengers
    - Until 18: no more than 1 teen passenger
  - No cell phone use in the Provisional Stage
AAP Recommended Standards

- Prompt imposition of fines, remedial classes or suspension for violation of passenger or curfew restrictions
- Zero tolerance of alcohol or drug use with revocation of license for drunk driving, excessive speeding or reckless driving
- Documented safe driving record before full license is granted
California Graduated Driver License

- **Learner’s Permit**
  - Minimum age of 15-1/2 years: must complete or be enrolled in driver’s ed/training and pass written test
  - Must hold permit for at least 6 months
  - Minimum of 50 hours of supervised driving practice with a licensed driver over the age of 25 (usually a parent) with 10 hours being at night
  - Parent must sign off the hours before license is obtained
California: Provisional Stage

- May obtain provisional license at 16. This stage lasts for a year, or until age 18, whichever comes first.
- Night time driving restrictions unless with a licensed adult over 25 from 11 PM until 5 AM.
- Passenger limits unless with a licensed adult over 25.
  - No teen passengers for 1st 12 months then no restrictions.
- No cell phone use (even hands free) until age 18.
California GDL

- Zero tolerance for drugs/alcohol. License suspension for one year if under 21 and convicted of driving under the influence of any amount of alcohol (BAL of 0.01% or higher) or controlled substance.

- Documented safe driving record before full license:
  - 2 at fault collisions or points will result in having to drive supervised for 30 days.
  - 3 at fault collisions or point convictions and will have Provisional License suspended for 6 months.
As Earl’s pediatrician, you wonder what can be done to make Earl safer behind the wheel. Which if any of these will be helpful? As a pediatrician, what should you talk to Earl and his mom about?

- Driver’s training
- Graduated Driver’s License
- Delaying age of licensure
- In-vehicle monitoring systems
- Parent-teen driving agreements
Do any of these have an effect in making teens safer drivers?

- Professional Driver Education
- Parent supervised driving
- Graduated driver licenses
- Delaying age at licensure
- Setting limits once license is obtained
  - Parent Teen Driving Agreement
  - Checkpoints
- In-vehicle monitoring
Generally no effect is seen on limiting teen crashes.

Basic driving skills are learned and mastered in a short time. Learning to assess and react to real-life situations takes many months.

This lack of effect is likely due to:
- limited time with the student
- driving in controlled traffic situations
- controlled internal environment free from distractions

Parent supervision during learner’s permit phase

- No evidence that more parent-supervised practice driving decreases risks when teen becomes licensed
  - Parents often limit the types of driving situations: lower speed roads, clear weather
  - Parents often engage in co-driving: anticipate and warn of hazards and keep vehicle free of distractions
  - Supervised driving is very safe

- However, if increased requirements of supervised driving delays license, this does make drivers safer

Graduated Driver Licenses

- Ample evidence that this makes teens safer drivers
- Largely through placing limits on high risk driving situations
  - Night driving
  - Driving with teen passengers
  - Cell phone use
- Is a good place to begin a dialogue about what restrictions are important
In-vehicle monitoring systems

- Have not been studied extensively in novice teen drivers
  - Studies done used in-vehicle alerts as well as sending information to a web site to be accessed by parent
- The few studies done have shown some improvements in risky driving behavior but these were not necessarily maintained over time
- The key to making sustained changes was still found to be parent engagement

Farmer CM et al. J of Safety Research 2010
Delaying age at licensure

- This is one of the stronger provisions of some Graduated Driver’s Licenses.
- States that allow licensing at 16 years old compared with 16.5 or 17 years old have higher crash rates among all 16 year old drivers in the state.
  - Whether or not the other 16 year olds are licensed.
- Parents can elect to delay the age of licensure of their teen which will improve safety of the teen.

Parent limit setting

- Risky driving, traffic violations and crashes are lower among teens whose parents apply driving restrictions after licensure.

- If parents and teen don’t have the same understanding of what limits are set, the teen is more likely to engage in high risk driving.
  - Putting the limits in writing clarifies parental expectations and consequences.

What is the parents role in helping teens be safer drivers?

- Determining the age when teens can get permit and license
- Supervision of practice driving
- Access to a safe automobile
- Setting and enforcing limits after licensure
- Penalties for not following rules

This is an important discussion for pediatricians to have with parents, especially in the use of Parent-teen Driving Agreements.
Most important determinants by parents to keep teens safe

- Delaying the age of permitting and licensing
- Imposing limitations on high risk driving, especially:
  - Night-time driving
  - Driving with other teens
- GDL limits on driving at night or with other teens is a secondary enforcement for police
  - It is up to parents to ensure compliance with these laws
Use of Parent-Teen Driving Agreements

- Written document signed by both the parent and teen driver
- This outlines the rules and responsibilities of both teen and the parent after a license is obtained
- Allows parents to specify rules for
  - Night time driving
  - Teen passengers
  - Road conditions or specific roads driven
Parent-Teen Driving Agreements

- Parents also put into writing the consequences of violation of the rules.
- These agreements allow for clear delineation of rules and consequences.
- Use encourages parents to dialogue with teens about the importance of these rules in a calm and nonjudgmental manner.
Parent-Teen Driving Agreements

- Many are available from different professional organizations and insurance companies and can be downloaded to give to families

- CDC & AAP: Parents are the Key:
  - [http://www.cdc.gov/ParentsAreTheKey/agreement/index.html](http://www.cdc.gov/ParentsAreTheKey/agreement/index.html)

- California DMV:

- Checkpoints:
  - [http://www.saferdrivingforteens.org](http://www.saferdrivingforteens.org)
Web-based program based on Protection Motivation Theory

It is designed to increase the limits that parents place on novice teen drivers

One of the few evaluations of Parent-Teen Driving Agreements

Can be accessed at

http://www.saferdrivingforteens.org
Checkpoints

- Makes use of Parent-teen Driving Agreement
- Parents set limits in 4 areas:
  - Night driving
  - Driving with teen passengers
  - Driving on high-speed roads
  - Driving in bad weather
- Divides the first year of driving into 4 time periods with gradual lifting of limits as teen gains experience without traffic violations
Checkpoint evaluation

- Has had 4 RCT’s all with good results
  - Recruitments through Driver Education instructors
- Show significantly increased use of Parent-Teen Driving Agreements
- Teens using Checkpoints are 9 times more likely to have parental restrictions on driving with teen passengers and driving at night on weekends
- Teens with stricter parent limits had fewer traffic citations and crashes during first year of licensure

Zakajsek et al. J of Adol Health 2013
Useful websites for you and your families to use

- [dmv.ca.gov](http://www.dmv.ca.gov/teenweb/more_btn6/traffic/traffic.htm#)
- [distraction.gov](http://www.distraction.gov)
- [Impactteendrivers.org](http://Impactteendrivers.org)
- [CDC teen drivers](http://www.cdc.gov/motorvehiclesafety/Teen_Drivers/index.html)
- [CDC Parents are the Key](http://www.cdc.gov/parentsarethekey/)
- [Allstatefoundation.org](http://www.allstatefoundation.org/teen-driving)
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- IIHS GDL laws by state: http://www.iihs.org/iihs/topics/laws/graduatedlicenseintro?topicName=teenagers
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